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AUTHOR Palincsar, Annemarie Sullivan
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ABSTRACT

The ninth in a series of studies to improve the strategies that poor reading comprehenders use to study text began as a training study containing three components: strategies to be taught, instructional mode by which they would be taught, and the metacognitive environment for the instruction. After identifying four strategies that merited investigation, the instructional mode (reciprocal teaching) was selected. The metacognitive environment in which the instruction was instituted was then analyzed, and the basic instructional package was investigated in a series of five studies in which the teacher was either the investigator, a volunteer reading teacher, a recruited reading teacher, or a peer tutor. The setting was a resource room or classroom; the content was either selected expository passages from basal texts or science material; and the students were seventh graders having difficulty in comprehending. Results showed that dialogue and comprehension improved substantially over time. This work suggests that an effective reading instruction program requires the identification of complementary strategies that are modeled by an expert and acquired by the learner in a context reinforcing the usefulness of such strategies. (DF)

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The Unpacking of a Multi-Component, Metacognitive Training Package

Annemarie Sullivan Palincsar
Counseling, Educational Psychology and Special Education
Michigan State University

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meeting of the American Educational
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Abstract

"The Unpacking of a Multi-component, Metacognitive Training Package"

For the past several years we have been engaged in a series of studies aimed at increasing the ability of poor comprehenders to learn from reading. Our intervention has focused on teaching the students four strategies (summarizing, question-generating, predicting, and clarifying) selected as facilitators of comprehension fostering and comprehension monitoring. The settings in which we have conducted our work have ranged from individual tutoring sessions conducted by the investigator to whole class instruction conducted by developmental reading teachers. While the degree of success of the intervention has been influenced by the setting, in each case we have observed reliable and durable improvements in comprehension which were accompanied by transfer across tasks.

Our interests have now turned to determining the components of the intervention principally responsible for these effects. This paper describes the rationale for conducting component analyses of 1) the learning strategies, 2) the instructional mode (reciprocal teaching), and 3) the metacognitive environment in which the instruction was situated. The merits of this research from both a practical and theoretical perspective are described and data, collected to date, are summarized.

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When one embarks on a research program of cognitive skills training, it is with the fervent hope that such a program will be generative in nature; generative to the extent that the learner improves on the trained task as well as on related cognitive tasks; generative in that the research informs theory regarding instruction and regarding the cognitive skills underlying successful performance of the targeted task and finally, from a practical aspect, generative in the sense that the research raises at least many questions for further study as it answers.

When we began the ninth in our series of studies and it became embarrassingly difficult to think of attractive and informative titles for manuscripts, I knew our work had at least met the last of these criteria. What I wish to address in this paper is how our research program became so prolific and what its progeny have been.

It began as a training study to improve the strategies poor reading comprehenders use to study text. As we conceptualized the study there were in fact three components to which we would attend; the strategies to be instructed, the instructional mode by which the strategies would be taught, and the metacognitive environment in which we would embed instruction.

Theories of comprehension and evaluation of what skilled readers do while reading suggested that the following four strategies merited investigation: summarizing, or identifying the gist of the text, formulating potential test questions regarding the content, demanding clarity when comprehension faltered, and making predictions with

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regard to upcoming content. It was anticipated that these four activities would serve not only to enhance comprehension but also would serve as a vehicle for comprehension monitoring.

Instruction took the form of a dialogue in which the teacher and students took turns leading a discussion concerning segments of the text. The dialogue was structured by the four activities previously described. Whoever lead the dialogue was responsible for generating a question to which the group responded, providing a summary on which the group could comment, elaborate; suggesting content in the passage which was unclear; and finally, predicting what content might be presented next and supporting this prediction. Naturally, during the initial days of instruction, principal responsibility for initiating and sustaining this dialogue befell the teacher. However, the teacher gradually transfered this reponsibility to the students. The interactive nature of this instruction prompted us, in collaboration with our colleagues, to call our instructional method reciprocal teaching.

Because time and intervening experiences obscure perception, I'm not sure we realized when we planned this instruction what potential it had. Therefore, the principles which I will now report, in part drove our choice of this model and in part are derived from our experiences with this model of instruction. We espouse this form of instruction because 1) the teacher models the activities rendering the underlying processes overt, explicit, and concrete; 2) the skills are exercised in the appropriate context of reading - not as isolated, decontextualized skills; 3) the dialogue provides the

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opportunity for the students to evaluate their facility with the skills and to evaluate the affect employing these skills has on comprehension 4) the teacher is constantly engaged in diagnostic teaching; providing feedback, instruction, and modeling that will move the student from one level to the next level of competence employing the strategies.

The final component to which we attended was the metacognitive environment in which instruction was instituted. We were very attentive to the metacognitive information we shared with our students--that information which would encourage and facilitate their maintaining and generalizing the instructed skills. The students were informed regarding why these strategies were important and in what situation they could be helpful. They were instructed to use the strategies as a means of monitoring their comprehension and they were asked to participate in evaluating their competence with the strategies.

This basic instructional package was investigated in a series of five studies. The five studies varied along the following dimensions; the teacher was either the investigator, a volunteer reading teacher, a recruited reading teacher or a peer tutor.

The setting was a resource room or classroom; and the content was either selected expository passages from basal texts or science material. This paper permits only the most global description of the results. In brief, consistently, 1) there was clear evidence that the dialogue during intervention improved substantially over time; 2) quantitative improvement on measures of comprehension was large and reliable; 3) the effects of intervention were durable

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with maintenance indicated up to six months and 4) improvement transferred to tasks which were similar to but distinct from the instructed strategies. Where measured, 1) the effect of training generalized to the classroom, and 2) improvement on our criterion referenced measures of comprehension was reflected on standardized tests of reading comprehension.

Having satisfied ourselves that the reciprocal teaching of the four strategies was a robust intervention; one that had utility not only in the pristine confines of a laboratory setting, but also on the battlegrounds in a classroom setting, we confronted the need to determine what, as Dr. Pressley (in press) describes, the "active ingredients" of this intervention package were. From a practical standpoint, such an analysis would permit us to streamline the procedure, perhaps rendering it more attractive to classroom teachers. From a theoretical perspective, such analysis would provide further study of the process of instructing reading comprehension.

The three components alluded to earlier in this paper are the likely candidates for scrutiny; the strategies, the instructional technique, and the metacognitive environment. To date, we have begun to assess the first two of these components. I would like to share the methodolgy and results of these investigations as well as our plans to determine the contribution of metacognitive instruction.

In each of the studies which follows, the criteria used in the selection of students were identical to those adopted in our initial work; the students were in the seventh grade, attending developmental reading classes, and indicating a significant disparity between

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decoding and comprehension skills - decoding skills being judged adequate while comprehension was significantly below grade level. The measures reported in this paper are student responses to comprehension questions following the independent reading of expository passages during each day of intervention.

The first study was designed to evaluate the relative effects of the two most frequently used strategies in comparison with the effect of the total package of strategies on reading comprehension. Of the four activities; summarizing, question-generating, demanding clarity and predicting; the two which were employed routinely after reading each segment of text were summarizing and question generating. Summarizing and question generating, as they were instructed, both focused the students' attention on identifying the central, as opposed to peripheral, content of the passage. Predicting and clarifying were employed only when appropriate. We have designed our strategy component study then to feature summarizing and question generating. The study has been conducted with four groups over two years. The same teacher implemented instruction with each group (all natural reading groups). She is one of the volunteer teachers who assisted in the third of our initial series of studies investigating the reciprocal teaching procedure. Each group received five days of baseline, during which reading comprehension was assessed using the same criterion-referenced measures designed for our original work. Groups 1 and 3 then received instruction in questioning only, i.e. the same reciprocal teaching procedure was implemented but only for the purpose of teaching question generating. Eight days

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of instruction were followed by three days of maintenance. They were then instructed in summarizing for eight days followed by the three days of maintenance, and finally practiced the four strategies for five days followed by a short-term and long-term (3 months) maintenance check. Group 2 experienced the same conditions except that they were first introduced to summarizing, followed by questioning, and then the four strategies. Group 4, following baseline, received the original reciprocal teaching package with all four strategies. The initial data presented in Figure 1 suggest that while the students did show gains, over time, in response to instruction in the isolated strategies; those students who were instructed in the simultaneous use of all four strategies responded more quickly to instruction and made greater gains. What remains to be explored here is the possibility that, with a group of students who present more language problems that those in this study, a more gradual introduction to the strategies may be more efficacious.

We have suggested (Palincsar, 1984; Palincsar & Brown, 1984) that reciprocal teaching exemplifies both proleptic teaching (Bruner, 1978; Wertscht, 1979) in which there is a gradual transfer of responsibility for the learning activity from the teacher to the student as well as scaffolded instruction (Rogoff & Gardner, 1984) in which the teacher provides the support necessary to facilitate the extension of skills to a higher level of competence. Therefore, when planning the analysis of the second component, the instructional technique, we were particularly interested in manipulating the opportunities for teacher-student interaction and guided practice. To this end,

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we designed four instructional conditions to teach the four strategies, and a fifth condition as a control. The first, reciprocal teaching/corrective feedback replicated our original procedure. Using the dialogue format, the teacher initially engaged in instruction and modeling of the four strategies. As the 12 days of instruction proceeded, the students were given more responsibility for the dialogue while the teacher guided their practice using modeling and feedback specific to each student.

The second condition, reciprocal teaching/practice was, for the first four days of instruction, identical to the reciprocal teaching procedure. However, after these four days, practice continued by having the students write their summaries, questions, points to be clarified and predictions and the teacher gave feedback by starring the best of the students' responses, hence, feedback was fairly minimal after the initial days of instruction.

The third condition, demonstration, permitted very little opportunity for interaction or practice. Each day, the teacher demonstrated the four strategies and student participation was restricted to answering the questions posed by the teacher.

In the fourth condition, which we have called treated control, the students were given worksheet activities which introduced them to the strategies, one at a time. In this condition, there was plenty of opportunity for practice and, because the worksheets were completed with teacher assistance, for student-teacher interaction. However, there were no opportunities to integrate and practice these strategies in the context of reading. Finally, there was an untreated

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control group which completed only the assessments associated with this study. The results are depicted in Figure 2 which represents the means of each group on the daily assessments for baseline, the first half of training and the second half of training. The results suggest that the most effective of these four interventions was the traditional reciprocal teaching procedure followed, but not closely, by the reciprocal teaching with practice and the worksheet activity. Demonstration was the least effective of the instructional conditions. These results support the role of teacher-student interaction for the purpose of achieving guided practice. While this is interesting from a theoretical perspective, the practical implications are worth noting as well. In this study, we were unable to identify a more economical means by which the same comprehension gains could be achieved as in the labor intensive reciprocal teaching procedure.

In the two studies, just described, metacognitive instruction focused on increasing learner awareness, was held constant across the various conditions. Each treatment group was informed about what strategy(ies) they were learning and why. They were also informed of the outcome of training as the results of the daily assessment were shared with the students. Metacognitive instruction focused on self-regulation was present in each condition of the first study but varied with each condition in the second study. Those students in the reciprocal teaching/feedback and reciprocal teaching/practice conditions had the opportunity to engage in the orchestration and monitoring of the strategies while those in the demonstration and worksheet groups did not. A third study is planned for the specific

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purpose of examining the role of metacognitive instruction. In this study, one group will receive the reciprocal teaching procedure but without additional instruction regarding the use of the strategies. A second group, in addition to the reciprocal teaching procedure, will receive daily instruction regarding the range of situations in which the strategies will be useful, including the daily assessment and classroom activities.

The third group will engage in self-monitoring to an extent previously untried in our work. Each student will independently generate and record a question, summary, and, when appropriate, prediction and clarification, while reading. They will rate the quality of their work prior to engaging in dialogue with the teacher who will provide external evaluation. The fourth group will receive reciprocal teaching plus awareness training and the opportunity for self-monitoring. Such a study should permit us the opportunity to evaluate the contributions of metacognitive supplements to strategy training.

Recently, after the completion of one of our research endeavors, we debriefed the teacher who had conducted the intervention. She confided that when she first agreed to participate in this project, she was under the impression that some "grandiose" person was going to come in and engage a "grandiose" plan to teach her students to comprehend better. She added that she had no idea she was that "grandiose" person. The word "grandiose" had never come to mind when thinking about descriptors for reciprocal teaching. And yet, there's a sense in which the instruction of reading comprehension must involve a grandiose scheme - for it is no small achievement

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for a large number of reading disabled students to acquire the flexible use of comprehension fostering and comprehension monitoring activities. Our work and the work of others suggests that such a scheme requires the identification of complementary strategies which are modeled by an expert and acquired by the learner with a good deal of support in a context that reinforces the usefulness of such strategies.

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Figure 1

STRATEGY ANALYSIS
PHASE MEANS

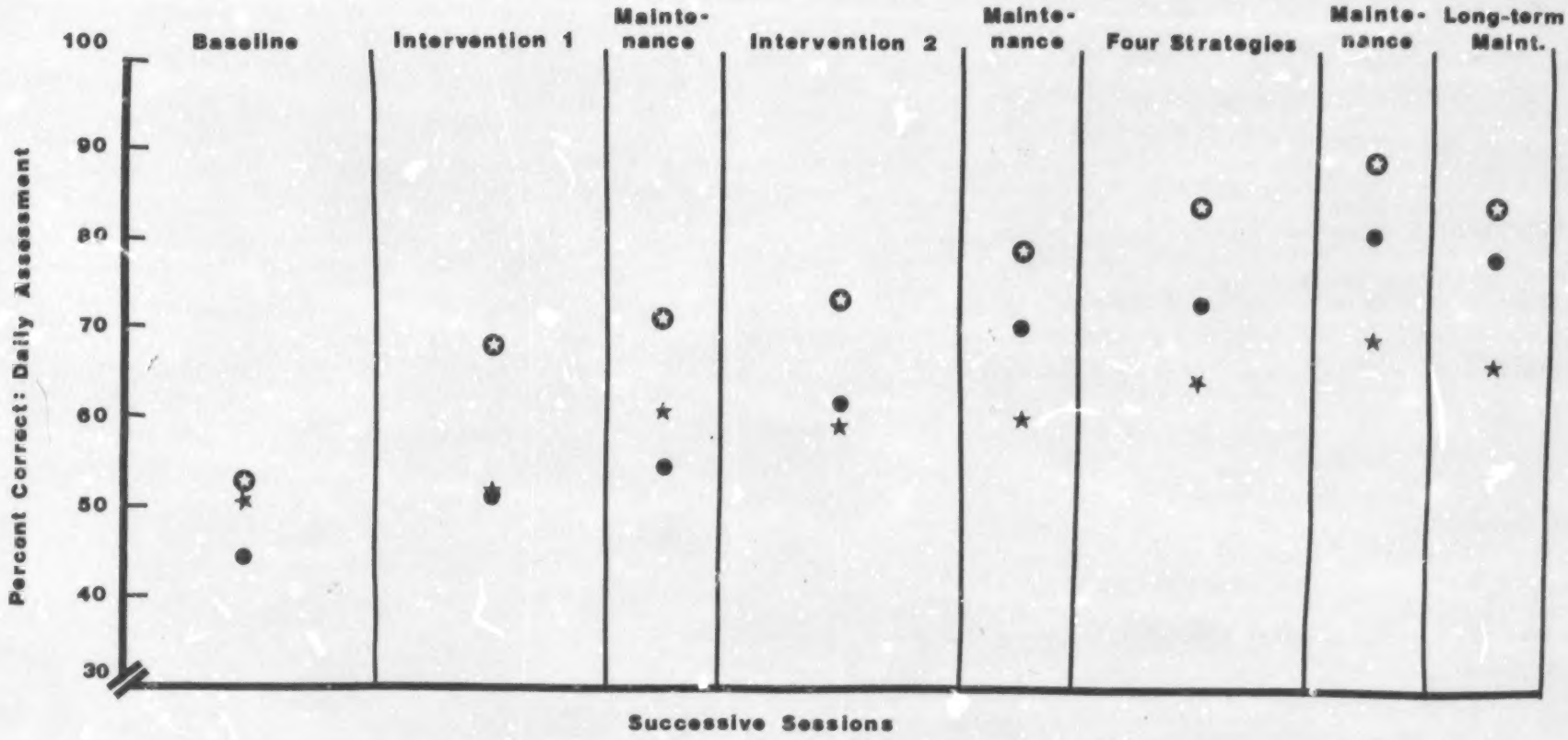
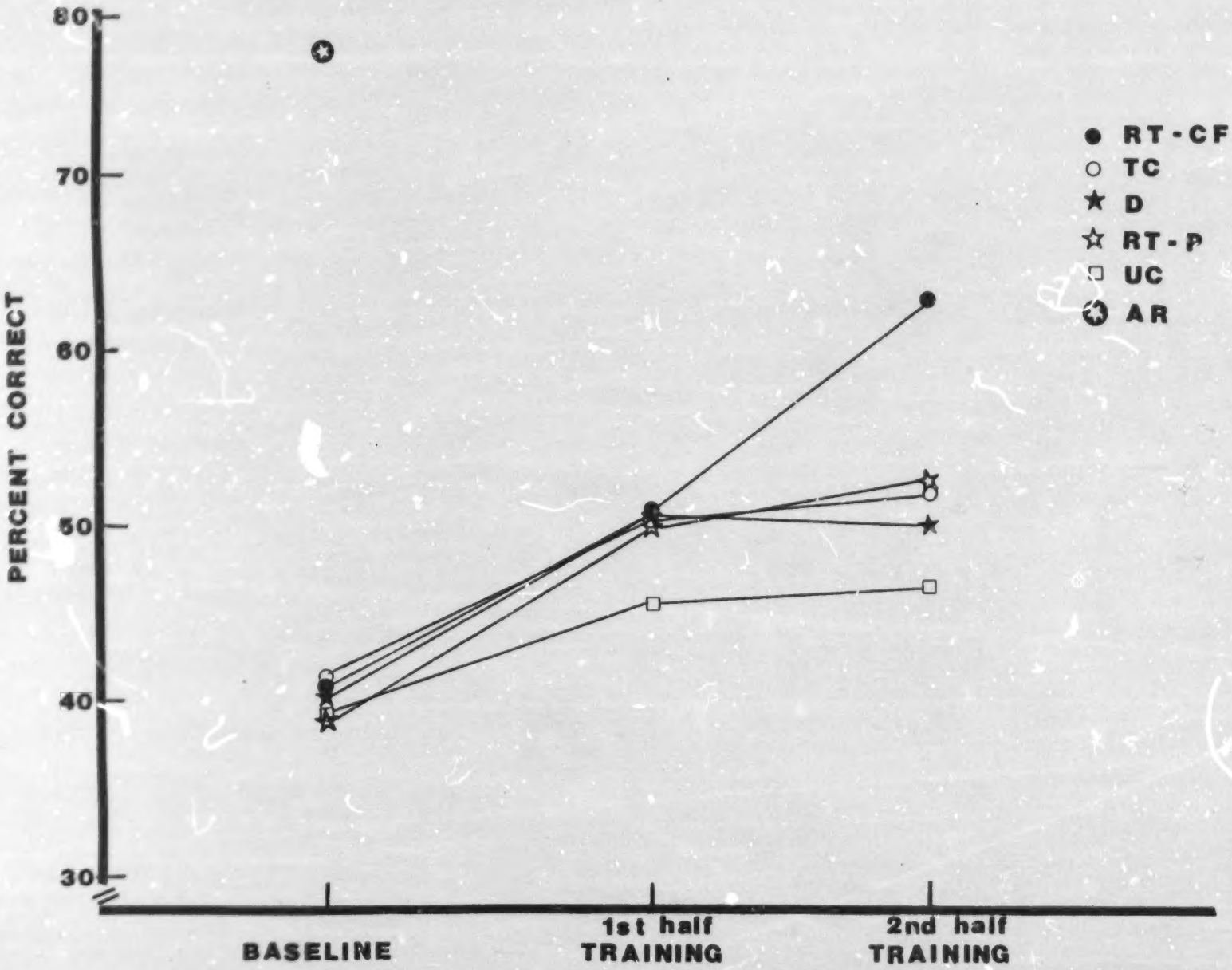


Figure 2
Instructional Analysis



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